IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants	:	Yves Gaignet, et al.
Serial No.	:	10/666,017
Filed	:	September 18, 2003
For	:	A MODULE FOR PURIFYING A FLUID, IN PARTICULAR WATER
Examiner	:	Kurtz, Benjamin M.
Art Unit	:	1723
Confirmation No.	:	7951
Docket No.	:	MCA-579

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450
Sir:

APPEAL BRIEF

This Brief supports the appeal to the Board of Patent Appeals and Interferences from the Final Office Action dated January 12, 2010, in the application identified above. Appellant filed a Notice of Appeal on April 9, 2010, and now submits this Brief as required by 37 C.F.R. §1.192(a). This Brief addresses the issues raised in the Final Office Action.

A credit card payment in the amount of $670.00 for a one-month extension, and for the fee for filing a brief in support of

an appeal pursuant to 37 C.F.R. §1.17(f), is being made with this filing.

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I. REAL PARTY IN INTEREST

The real party in interest is Millipore Corporation, the assignee of record.

II. RELATED APPEALS AND INTERFERENCES

To the best of the Appellants' knowledge, there are no related appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this pending appeal.

III. STATUS OF CLAIMS

Claims 3 and 13 are cancelled.

Claims 1, 2, 4-12 and 14-23 are pending in the subject application.

Claims 1, 2, 4-12 and 14-23 stand rejected and are the appealed claims.

IV. STATUS OF AMENDMENTS

No amendments to the claims were filed after Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 1 relates to a module for purifying a liquid (page 1, lines 3-5). The module includes a cylindrical container (page 1, lines 6-8) provided at a first of its axial ends with a head (page 3, lines 29-31) having a fluid inlet and outlet orifices communicating with the interior of the module (page 1, lines 25-27) and having a cylindrical skirt (page 4, lines 3-4) projecting axially therefrom (FIG. 4), and at a second of its axial ends with a bottom comprising a crenellated ring projecting axially therefrom (page 4, line 28 and FIG. 5), in which are housed pretreatment means for carrying out a first operation of purifying the fluid (page 1, lines 27-29) and treatment means for carrying out a second operation of purifying the fluid after the latter has been treated by the pretreatment means (page 1, lines 29-31), wherein said container is monolithic (page 1, line 32) to form a disposable module (page 1, line 33) and the interior thereof is divided by separator means into an external cylindrical space and an internal cylindrical space (page 1, lines 33-35), said separator means extending from said cylindrical skirt to said crenellated ring (FIG. 3), said external cylindrical space and said internal cylindrical space communicating with each other via

one or more passages defined by the crenellations in said crenellated ring (page 4, lines 28-31), the treatment means include a cartridge including one or more selectively permeable membranes for dividing, by virtue of permeation through the membrane or membranes due to the action of a pressure gradient, the flow of fluid that has undergone the first purification operation and caused to flow tangentially to the membrane or membranes into a flow of permeate consisting of purified fluid that has passed through the membrane and therefore undergone two purification operations and a flow of retentate consisting of residual fluid that has not passed through the membrane or membranes (page 2, lines 3-14), the pretreatment means and the cartridge are housed in the external cylindrical space and the internal cylindrical space, respectively, the external cylindrical space communicates, at the same end as the first axial end of the container, with a first orifice for feeding fluid to be purified to the pretreatment means, and the internal cylindrical space communicates separately, at the same end as the first axial end of the container, with a second orifice for evacuating from the module the flow of permeate and with a third orifice for evacuating from the module the flow of retentate (page 2, lines 15-25), wherein said cartridge

comprises (i) a cylindrical enclosure and, concentric therewith, a hollow, perforated, central innermost tube of said cylindrical container in which said cartridge is contained, said central innermost tube sharing the axis of said cylindrical container with said external cylindrical space and said internal cylindrical space (page 3, lines 1-5), (ii) one or more selectively permeable reverse osmosis treatment membranes between said cylindrical enclosure and said central innermost tube and communicating with said central innermost tube for collection by the latter of the flow of permeate and with the exterior of said cartridge via the annular faces thereof between the cylindrical enclosure and said central innermost tube at each axial end of said cylindrical enclosure, respectively to feed said cartridge with fluid treated by said pretreatment means and for the outflow of retentate (page 3, lines 5-15).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1, 2, 4-12 and 14-23 are obvious over Bray, U.S. Patent No. 3,542,199, Brown, U.S. Patent No. 4,990,248 and Burrows, U.S. Patent No. 5,221,473, under 35 U.S.C. §103(a).

Whether claims 7, 8, 10-12 and 22 are obvious over Bray, Brown and Burrows, and further in view of Regunathan, U.S. Patent No. 4,645,601, under 35 U.S.C. §103(a).

Whether claim 9 is obvious over Bray, Brown, Burrows and Regunathan, and further in view of Petrucci, U.S. Patent No. 4,948,505.

Whether claim 17 is obvious over Bray, Brown, Burrows and Regunathan, and further in view of Gundrum, U.S. Patent No. 5,891,334.

VII. ARGUMENT

1. Claims 1, 2, 4-12 and 14-23 are not obvious over Bray, U.S. Patent No. 3,542,199, Brown, U.S. Patent No. 4,990,248 and Burrows, U.S. Patent No. 5,221,473, under 35 U.S.C. §103(a).

In the Final Rejection dated January 12, 2010, the Examiner rejects 1, 2, 4-12 and 14-23 are obvious over Bray, U.S. Patent No. 3,542,199, Brown, U.S. Patent No. 4,990,248 and Burrows, U.S. Patent No. 5,221,473, under 35 U.S.C. §103(a).

The Examiner states that Bray teaches a module comprising a cylindrical container provided at a first of its axial ends with a head (20) having fluid inlet and outlet orifices communicating with the interior of the module and having a cylindrical skirt

projecting therefrom, in which are housed pretreatment means (32) and treatment means (60), which perform the same function in substantially the same way with substantially the same result as the pretreatment and treatment means claimed, comprising a cylindrical wall closed at a first axial end by a head 20 and closed at a second axial end by a bottom 44. The Examiner states that the Bray container is divided by a separator 36 into an external cylindrical space and an internal cylindrical space, the separator means extending from the cylindrical skirt to the bottom of the container, the external and internal cylindrical spaces communicating with each other via one or more passages in the vicinity of the second axial end of the container, the treatment means include a cartridge including one or more selectively permeable membranes, the pretreatment means is housed in the external cylindrical space and the treatment means is housed in the internal cylindrical space, the external cylindrical space communicates, at the first axial end of the container with a first orifice (30) and the internal cylindrical space communicates separately, at the first axial end, with an orifice (88), the cartridge comprising a cylindrical enclosure and concentric therewith a hollow perforated central innermost tube (58) of the cylindrical container in which the cartridge is contained, the central innermost tube sharing the axis of the

cylindrical container with the external cylindrical space and the internal cylindrical space, a reverse osmosis treatment membrane between the cylindrical enclosure and the central innermost tube and communicating with the central innermost tube.

The Examiner admits that Bray does not teach the first axial end having an inlet and two outlets, or a bottom comprising a crenellate ring. The Examiner cites Brown as disclosing a first axial end having an inlet and two outlets in a module. However, the mere fact that Brown discloses a module having an inlet and two outlets at the same end in no way makes it obvious to modify Bray to have an inlet and two outlets at the same end. In fact, Bray expressly teaches that the purified water must be directed up through inner tube 58 so that it can then flow into the top interior portion or product water compartment of the module, above septum 44, for further processing by activated carbon, and finally is discharged through outlet 108. This is the very portion of the module that the Examiner conveniently ignores in calling the septum a "closed end" of container 12, and now it is again ignored in concluding that simply because a module with an inlet and two outlets at the same end is known, it would be obvious to so modify Bray.

Indeed, the Examiner states that all of the claimed elements were known in the prior art and one skilled in the art could have

combined the elements as claimed by known methods with no change in their respective functions. However, Appellant respectfully submits that one skilled in the art could not combine the Brown feature of an inlet and two outlets at one end with the module of Bray, as doing so would necessitate the complete elimination of the top interior portion of the module 10 of Bray, which is completely contrary to Bray and would cause Bray to fail for its intended purpose. Appellants respectfully submit that the skilled artisan would immediately appreciate that Bray could not be so modified, since doing so would completely vitiate the function and purpose of the top portion of the module.

The Examiner applies Burrows for teaching a crenellated ring at the bottom of a reverse osmosis cartridge, including locating means taking the form of patterns 160 projecting from the internal face of the bottom of the container, the ring holding a cylindrical wall 142 of a separator means at an axial distance from the face of the bottom and including recesses between crenellations forming axial abutments for the wall 142 with passages for fluid formed by the crenellations in the crenellated ring. The Examiner concludes that it would have been obvious to use the ring as taught by Burrows in the module (of Bray?) because the ring allows water to pass through it to a

central tube, allowing a less restrictive flow of fluid from the outer cylindrical space to the internal cylindrical space.

Appellant respectfully submits that the Examiner's characterization of the Burrows assembly is incorrect. The ring of Burrows does not hold a cylindrical wall 142 of a separator means; an adapter fitting 159 is used to engage the ribs 161, and the adapter fitting 159 is mounted into the lower end of the support tube 142. In this context, note that the instant claim 1 expressly recites that the separator means extends from the cylindrical skirt to the crenellated ring. The so-called cylindrical wall 142 of the separator means of Burrows does not so extend; it terminates at the radially extending flange of the adapter fitting 159. This requires a different construction and an additional element.

The Examiner addresses this argument by stating that the ring of Burrows holds a cylindrical wall of a separator means in that it engages the element 159 (the adapter fitting) which is simply an extension of the cylindrical wall of the separator means and is only used to provide support for the additional flow path defined by 172. Appellants respectfully disagree. First, the Examiner equates central support tube 142 of Burrows with the instant separator means. However, the central support tube 142 of Burrows is required to have a plurality of radially

open perforations 158 formed therein, which allow purified water to pass. Accordingly, the internal spaces on either side of the tube 142 communicate with each other through these perforations, and thus the tube 142 is not a true separator means. Further still, the instant claim 1 recites that the external cylindrical space and the internal cylindrical space communicate with each other via one or more passages defined by the crenellations in the crenellated ring (i.e., not through the separator), whereas the analogous external and internal cylindrical spaces in Burrows communicate through the central support tube perforations 158. Second, the adapter fitting 159 is not "simply an extension of the cylindrical wall of the separator means" as the Examiner alleges, and is not "only used to provide support for the additional flow path defined by 172" as the Examiner alleges. Burrows teaches that the adapter fitting 159 is mounted to the lower end of the support tube 142, is sealed with O-rings to prevent undesired water leakage between the fitting and the support tube, and defines a chamber 161 for impure rejected water. Accordingly, modification of Bray with this structure of Burrows, even if somehow motivated, would not lead to the present invention as claimed.

Furthermore, the Examiner provides no rational basis as to why one skilled in the art would modify Bray to include the

crenulated ring of Burrows. The Examiner states that Bray teaches a loose connection between the wall 36 and the bottom to provide a flow path for fluid to flow from the exterior cylindrical space to the interior cylindrical space. First, the loose connection is not at the bottom where the crenellated ring is located, but rather is between the wall 36 and the septum 44. Indeed, the wall 36 is sealed to the bottom plug 20. Second, if Bray already provides a mechanism by which fluid can flow from the exterior cylindrical space to the interior cylindrical space, why would the skilled artisan be motivated to use the Burrows crenulated ring in the Bray module to carry out the same operation already achieved by Bray? There is no support for the Examiner's conclusion that the ring of Burrows would allow a less restricted flow of fluid from the outer cylindrical space to the internal cylindrical space.

The Examiner addresses Appellant's argument that the loose connection is not at the bottom of the module by stating that the argument is based solely on orientation of the container. The Examiner's counter argument looses site of the fact that the crenellated ring in Burrows is located at the bottom of the module.

In addition, the instantly claimed separator means is defined as dividing the interior of the module into an external

cylindrical space and an internal cylindrical space, wherein pretreatment means is housed in the external cylindrical space and the cartridge is housed in the internal cylindrical space. No such separator means is present in Burrows.

Further still, both Bray and Brown are not designed and do not have the components arranged to form a monolithic disposable module with all connections on one side as recited in the instant claims, in order to be easily plugged into a water treatment unit. Both the prefilter and RO membranes in Bray and Brown are easily replaceable and the units are not monolithic and designed for disposal. With particular reference to claim 6, the Examiner states that the recitation of the head and bottom being non-removable is merely a recitation of making the head and bottom integral with the housing, and that the use of a one piece construction is a matter of obvious engineering choice. However, the Examiner's importation into the claim of language that is not present is contrary to law. Claim 6 does not recite that the head and bottom are integral with the housing, and certainly embodiments exist where a non-removable head and bottom could be present as separate (but non-removable) elements. Furthermore, Brown teaches away from a non-removable head and bottom in teaching a removable cap 46, which is

removable in order to replace the reverse osmosis filter cartridge 10 (column 6, lines 40-51).

With particular reference to claim 15, none of the cited references discloses or suggests recesses between the crenellations in the ring that form axial abutments.

With particular reference to claims 18-21, the head retainer 53d of Brown is dedicated to the postfilter that is not present in the instant device, and thus does not correspond to the nesting retainer of these claims.

2. Claims 7, 8, 10-12 and 22 are not obvious over Bray, Brown and Burrows, and further in view of Regunathan, under 35 U.S.C. §103(a).

Claims 7, 8, 10-12 and 22 are believed to be allowable by virtue of their dependence, for the reasons articulated above. Regunathan does not supply the above-mentioned deficiencies of Bray, Brown and Burrows.

With particular reference to claim 8, the combination of cited references do not disclose or suggest a skirt and crenellated ring provide continuity of separation from a corresponding longitudinal end of the cylindrical wall to the head and to the bottom, respectively.

3. Claim 9 is not obvious over Bray, Brown and Burrows and Regunathan, and further in view of Petrucci, under 35 U.S.C. §103(a).

Claim 9 is believed to be allowable by virtue of its dependence, for the reasons articulated above. Petrucci does not supply the above-mentioned deficiencies of Bray, Brown, Burrows and Regunathan.

4. Claim 17 is not obvious over Bray, Brown, Burrows and Regunathan, and further in view of Gundrum, under 35 U.S.C. §103(a).

Claim 17 is believed to be allowable by virtue of its dependence, for the reasons articulated above. Gundrum does not supply the above-mentioned deficiencies of Bray, Brown, Burrows and Regunathan.

VIII. CONCLUSION

For the reasons set forth above, Appellant requests that the Examiner's rejections of claims 1, 2, 4-12 and 14-23 be reversed and that all pending claims be allowed.

Respectfully submitted,

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CLAIMS APPENDIX

CLAIMS ON APPEAL

1. A module for purifying a fluid, comprising a cylindrical container provided at a first of its axial ends with a head having fluid inlet and outlet orifices communicating with the interior of the module and having a cylindrical skirt projecting axially therefrom, and at a second of its axial ends with a bottom comprising a crenellated ring projecting axially therefrom, in which are housed pretreatment means for carrying out a first operation of purifying the fluid and treatment means for carrying out a second operation of purifying the fluid after the latter has been treated by the pretreatment means, wherein said container is monolithic to form a disposable module and the interior thereof is divided by separator means into an external cylindrical space and an internal cylindrical space, said separator means extending from said cylindrical skirt to said crenellated ring, said external cylindrical space and said internal cylindrical space communicating with each other via one or more passages defined by the crenellations in said crenellated ring, the treatment means include a cartridge including one or more selectively permeable membranes for dividing, by virtue of permeation through the membrane or membranes due to the action of a pressure gradient, the flow of fluid that has undergone the first purification

operation and caused to flow tangentially to the membrane or membranes into a flow of permeate consisting of purified fluid that has passed through the membrane and therefore undergone two purification operations and a flow of retentate consisting of residual fluid that has not passed through the membrane or membranes, the pretreatment means and the cartridge are housed in the external cylindrical space and the internal cylindrical space, respectively, the external cylindrical space communicates, at the same end as the first axial end of the container, with a first orifice for feeding fluid to be purified to the pretreatment means, and the internal cylindrical space communicates separately, at the same end as the first axial end of the container, with a second orifice for evacuating from the module the flow of permeate and with a third orifice for evacuating from the module the flow of retentate, wherein said cartridge comprises (i) a cylindrical enclosure and, concentric therewith, a hollow, perforated, central innermost tube of said cylindrical container in which said cartridge is contained, said central innermost tube sharing the axis of said cylindrical container with said external cylindrical space and said internal cylindrical space, (ii) one or more selectively permeable reverse osmosis treatment membranes between said cylindrical enclosure and said central innermost tube and communicating with said central innermost tube for collection by

the latter of the flow of permeate and with the exterior of said cartridge via the annular faces thereof between the cylindrical enclosure and said central innermost tube at each axial end of said cylindrical enclosure, respectively to feed said cartridge with fluid treated by said pretreatment means and for the outflow of retentate.

2. A module according to claim 1, wherein said cartridge is a reverse osmosis, nanofiltration or ultrafiltration cartridge.

4. A module according to claim 1, further comprising means for providing a sealed connection between the separator means and the cylindrical enclosure of said cartridge, said means being attached to the cylindrical enclosure and extending around the cylindrical enclosure.

5. A module according to claim 1, wherein said pretreatment means are chosen from the group consisting of activated charcoal, polyphosphates and frontal filtration elements.

6. A module according to claim 1, wherein said container includes a cylindrical wall closed at the first axial end by said head for connecting the module to a fluid purification unit and including three parallel connectors in each of which is formed one of the three orifices and the cylindrical wall is closed at the second axial end by said bottom, wherein said head and said bottom are non-removable.

7. A module according to claim 6, wherein said connectors extend globally perpendicularly to the axis of the cylindrical wall of the container.

8. A module according to claim 6 or claim 7, wherein said skirt and said ring provide continuity of separation from a corresponding longitudinal end of the cylindrical wall to the head and to the bottom, respectively.

9. A module according to claim 8, wherein said head is fixed to the cylindrical wall of the container by gluing, rotation welding, ultrasound welding or fusion welding their annular edges.

10. A module according to claim 8, wherein said cylindrical skirt of the head and the axial end of the cylindrical wall of the separator means at the same end as the first axial end of the container are either fixed together by gluing, rotation welding, ultrasound welding or fusion welding their annular edges or housed concentrically with one inside the other with a seal between them.

11. A module according to claim 10, wherein said skirt of the head and the cylindrical wall of the separator means each have an annular recess forming with the opposite recess an annular housing for the seal.

12. A module according to claim 8, wherein said ring of the bottom and the axial end of the cylindrical wall of the separator

means at the same end as the second axial end of the container are housed concentrically one inside the other.

14. A module according to claim 1, wherein the bottom of the container includes locating means for holding the cylindrical wall of the separator means at an axial distance from the internal face of the bottom to allow fluid to flow from the external cylindrical space to the internal cylindrical space via the crenellations of the crenellated ring.

15. A module according to claim 14, wherein said crenellated ring includes recesses between the crenellations and forming axial abutments serving as locating means for the cylindrical wall of the separator means.

16. A module according to claim 15, wherein said locating means take the form of patterns projecting from the internal face of the bottom of the container.

17. A module according to claim 8, wherein the perimeter of the cylindrical wall of the separator means has in the vicinity of each axial end of the cylindrical wall centering fingers extending radially as far as the cylindrical wall of the container and serving to place the axis of the cylindrical wall on the axis of the container.

18. A module according to claim 6, wherein said head and the bottom of the container include a nesting retainer for the cartridge.

19. A module according to claim 18, wherein said head and the bottom each include a bush housing a respective axial end portion of the central tube and one or more seals are disposed between the latter and the central bush of the head, the latter bush communicating with the second orifice.

20. A module according to claim 19, wherein said seal or each seal is housed in a groove formed in the central tube.

21. A module according to claim 19 or claim 20, further comprising a central truncated cone for positioning the cartridge, operative inside the central tube of the latter, and projecting from the internal face of the bottom of the container, concentrically with the bush of the bottom and over a length greater than that of the bush.

22. A module according to claim 8, further comprising a perforated or porous disk in the vicinity of each axial end of the container and between the cylindrical walls of the latter to retain the pretreatment means in the external cylindrical space whilst allowing the fluid to be purified to pass.

23. A module according to claim 2, wherein said central innermost tube is closed at the same end as the annular face of said cartridge through which the fluid enters the cartridge.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

There are no decisions rendered by a court or the Board in any of the proceedings identified in section II of this Brief.